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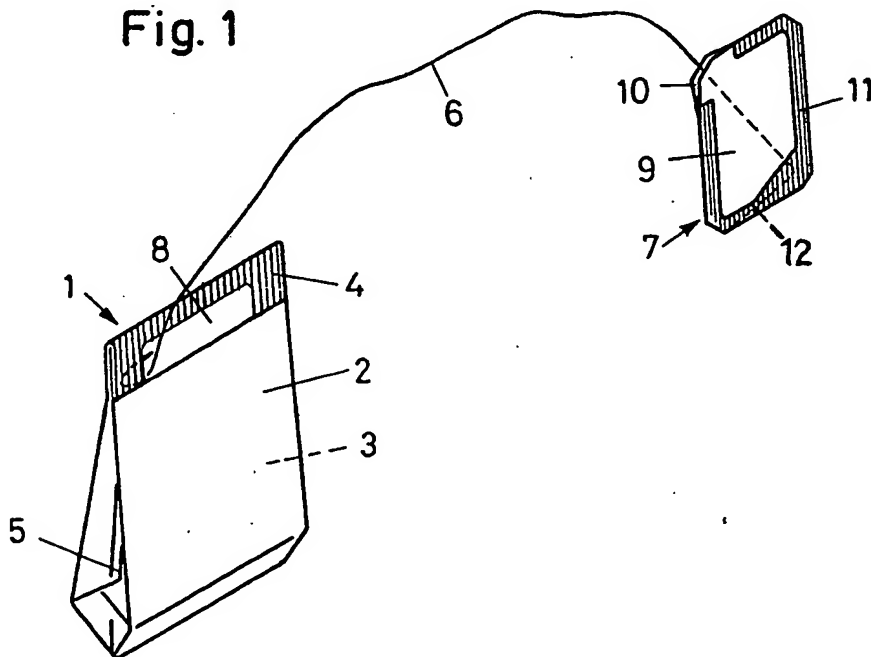
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(54) Infusion bags

(57) An infusion bag, e.g. a tea bag, is connected to a holder (7) by a filament (6), the bag being closed by folding over its open end which is then bonded over a region (4) to seal the end closure, secure one end of the filament and form a pocket (8) in which a portion of the holder is releasably held, and the holder

being formed with a cavity (9) in which almost the entire length of filament is accommodated. The filament is arranged in zig-zag form in the holder. Individual holders accommodating filaments are separated from a strip formed by enclosing a continuous filament between two webs which are joined to one another to define the pockets and secure the filament. Accommodation of the filament in the holder which is received in the pocket on the infusion bag prevents tangling when stored with similar infusion bags provided with filaments and holders.

Fig. 1



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Fig. 1

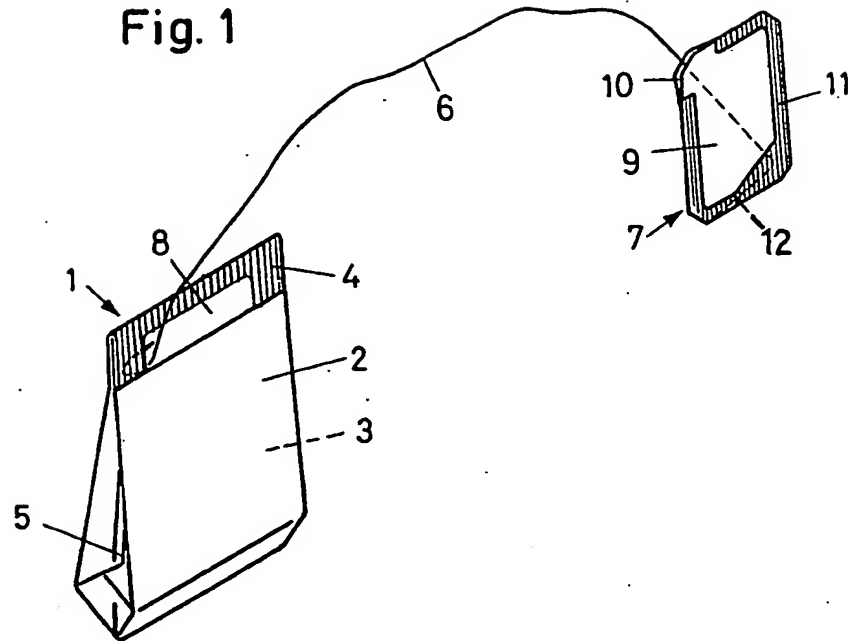


Fig. 2b

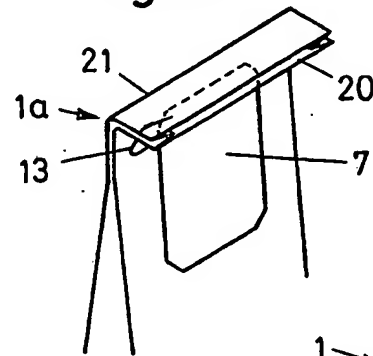


Fig. 2a

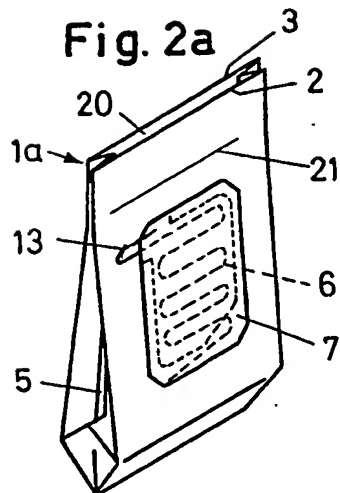


Fig. 2c

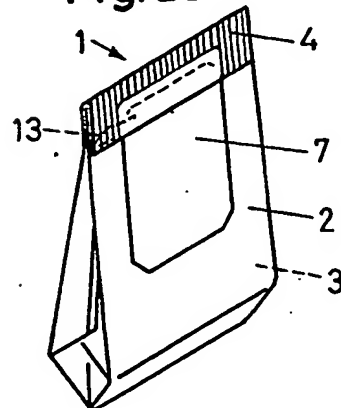


Fig. 3

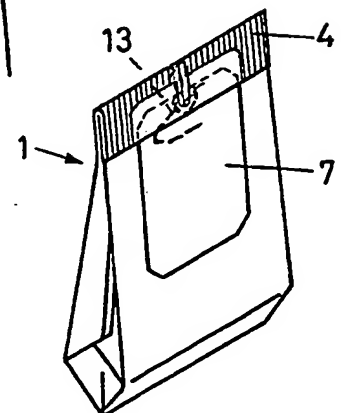


Fig. 4a

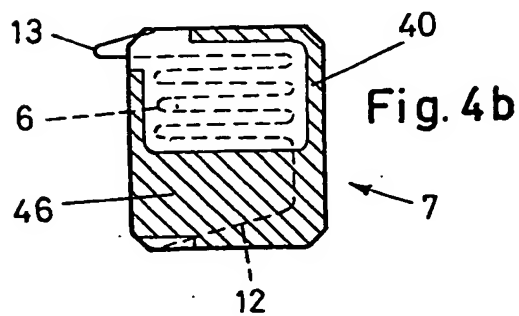
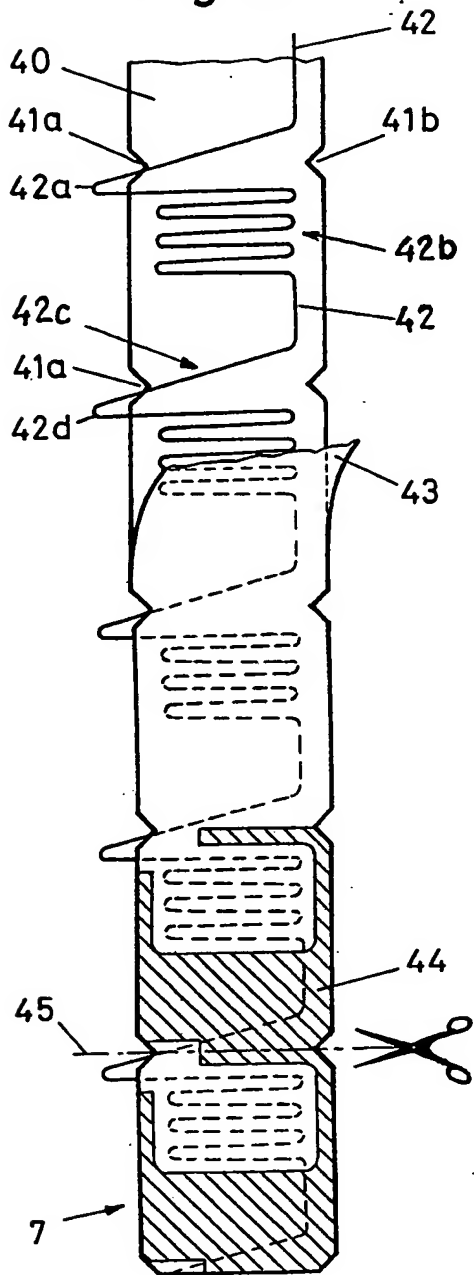


Fig. 5a

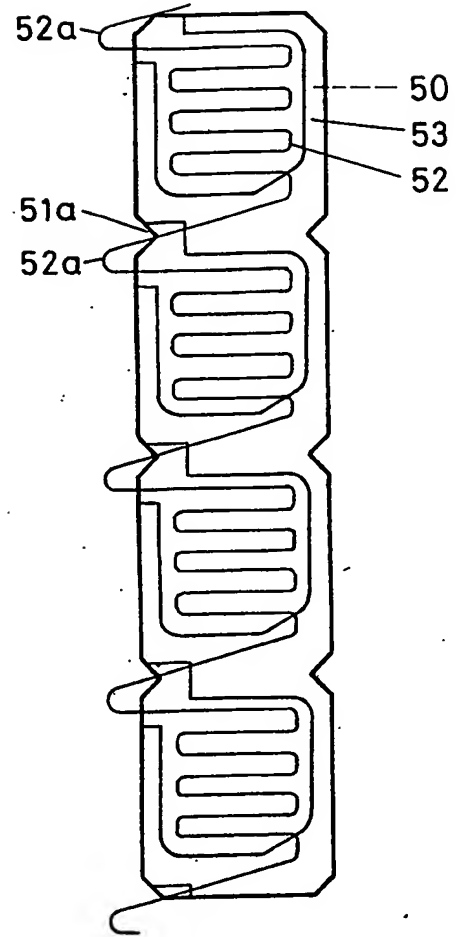


Fig. 5b

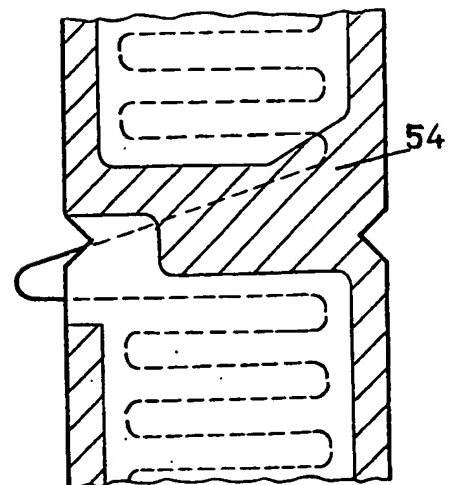


Fig. 6

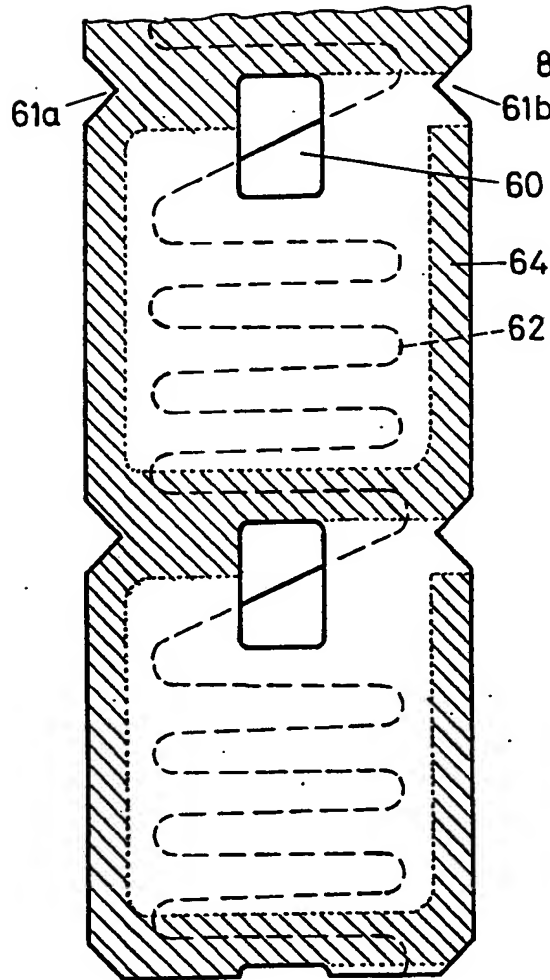


Fig. 8

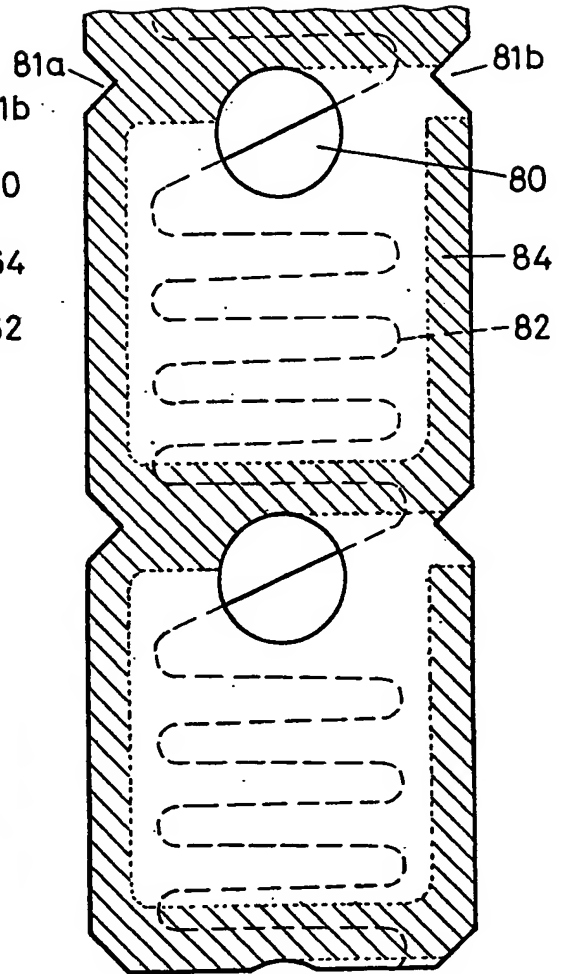


Fig. 7

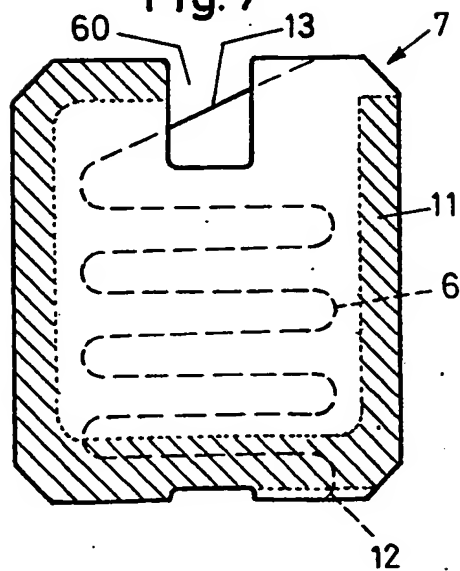
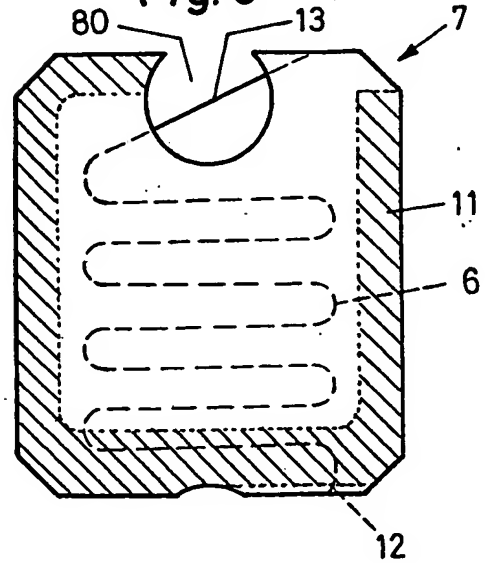


Fig. 9



SPECIFICATION

Infusion bag

5 The present invention relates to an infusion bag.
 Infusion bags, particularly for tea, are becoming increasingly popular. Very large packages made of cardboard, sheet-metal or the like are therefore filled with up to 100 and more of such tea bags. During
 10 transportation, the contents of the bags shift and it may therefore happen that the bags fall downwards over each other. When the holders and the filaments of the tea bags are free to move, a complete mix-up can occur in the package.

15 To avoid this, it was proposed in German Patent Specification No. AS 1 134 626 to fold the tea bags at the middle after having moved the contents into one half of the bag, and to place the holder together with the thread in this folded pocket. Apart from being
 20 more tidy, this also offered the advantage that the package could be kept smaller. A disadvantage, however, was that, if the package was no longer tightly filled, the bags could still fall downwards over each other, and the holders and filaments become
 25 loose and could become mixed up.

According to German Patent Specification No. AS 2 654 867 and the prior art described therein, it has also been proposed to place each bag, together with its filament, in an envelope provided with a tear-off
 30 part forming a holder. After this holder is torn off, the envelope is opened and the bag, connected to the torn-off holder by the filament, could be pulled out. The disadvantage of this arrangement was the considerable trouble and expense involved in inserting
 35 each tea bag in an envelope and in the need for then sealing the envelope.

An object of the present invention is to provide an infusion bag, particularly for tea, wherein the filament does not hang out and, furthermore, the holder
 40 and the bag are held together.

According to one aspect of the invention there is provided an infusion bag for an infusible substance comprising: a bag made of a liquid-penetrable material for accommodating the substance, a turned-over edge portion of the bag which closes the filling
 45 opening and which, for the purpose of forming a pocket directed away from the turned-over edge, is sealed by sealing seams at least at each side and together with the walls of the bag at the turned-over
 50 edge; a filament attached at one end in one of the sealing seams; and a holder attached to the free end of the filament, the holder having a cavity in which practically the entire length of the filament is accommodated.

55 According to another aspect of the invention there is provided a method of producing the infusion bag wherein first the holder is produced as a strip in such manner that a filament is laid in zig-zag form on a strip of connectible material and is attached thereto
 60 in a readily releasable manner, a covering strip is arranged on this first strip and is joined to the first strip laterally as well as in the form of a web extending over the strip, the web having at least one area across which the filament extends in a freely movable manner, the individual holders are then sepa-

rated off in the zone of the web in such manner that the free passage for the filament is formed, a bag filled with the substance is turned over at the open end and the holder with the free end of the filament
 70 is first laid in the fold at the turned-over part, and finally the turned-over part together with the walls of the bag are folded round the holder and are joined together.

To help understanding of the invention various embodiments of the invention will now be described by way of example and with reference to the accompanying drawings, in which:—

Figure 1 is a perspective view of an infusion bag in accordance with the invention, with its holder and
 80 filament pulled out,

Figures 2a to 2c illustrate three stages in the production of the infusion bag,

Figure 3 illustrates a modified means for attaching the filament,

85 Figures 4a and 4b illustrate different stages in the production of the holder, and a separated holder,

Figures 5a and 5b illustrate a further arrangement of the filament, and on a larger scale, a division point at which a holder is separated, and

90 Figures 6 to 9 illustrate two different further forms of the holder, in strip form and individually in each case.

Figure 1 illustrates an infusion bag 1 in accordance with the invention. It consists, in the known manner,
 95 of a folded water-penetrable paper, the two layers 2 and 3 of which can be better seen from Figure 2a and which are joined together at both sides at the edge and at a point 5. At the top, the two layers 2 and 3 are joined together at a sealing strip 4. Bonded into this
 100 sealing strip 4 is a filament 6, the free end 12 of which is introduced into a holder 7 and is bonded thereto. As shown by the shaded portion on the sealing strip 4 on the infusion bag 1 and on the sealing strip 11 on the holder 7, a non-gummed area 8 in the
 105 form of a rectangle is present in the case of the infusion bag 1, and an ungummed central portion 9 is present on the holder 7. The ungummed area 8 on the infusion bag 1 is of substantially the same width as the holder 7, so that the latter can be introduced
 110 into the envelope as into a pocket. The ungummed portion 9 of the holder 7 serves for accommodating the filament 6 when the holder is inserted into the pocket at the ungummed area 8 of the infusion bag 1. This results in the filament 6 never being visible
 115 and in the holder 7 being retained on the infusion bag 1. Thus, a further covering for the infusion bag 1 is rendered unnecessary, and the bag can be arranged in a container with several further infusion bags without difficulty and without the risk of their
 120 bunching.

Figures 2a to 2c illustrate diagrammatically three different stages in the production and closing of the infusion bag in accordance with the invention. As shown in Figure 2a, the two layers 2 and 3 of water-penetrable paper are bonded to each other at the side at a point 5 to form a bag 1a which has an open
 125 end 20. The infusion material, for example leaves of tea, can be introduced through this open end 20. Shown in front of the bag 1a is a holder 7 with a
 130 zig-zag filament 6 drawn in broken lines. The fila-

ment is bonded by its end 12 to the edge 11 of the holder 7, and the other end 13 of the filament 6 projects, in the form of a loop, from the holder 7 at the open side portion 10. A straight line 21 indicates a fold along the bag 1a.

Figure 2b shows the upper portion, containing the opening 20 of the bag 1a, turned into a folded position about the line 21. The holder 7 with the end 13 of the filament is then brought into position, so that portions are created at the side and top whereby the bag 1a can be closed by bonding without the holder becoming bonded to it.

Figure 2c shows the last stage in the production of an infusion bag 1 with the holder 7 in position and with an edge 4 at which the layers 2 and 3 are joined together, and the layer 3 is also joined to the turned-over portion. As can be clearly seen, the loop-like end 13 of the filament is disposed in the connected edge 4, so that the filament 6 is retained at one of its ends.

These three Figures clearly show that it is a very simple matter to seal a bag 1a forming an infusion bag 1 having a filament 6 and a holder 7 as proposed by the invention, and they also demonstrate that no metal clips involving a separate operation and/or no separately produced pockets are necessary to attach the filament 6 and to accommodate the holder 7 on the infusion bag 1.

Figure 3 illustrates substantially the same form of infusion bag 1 and holder 7, but in this case the end 13 of the filament is passed out of the holder 7 through a cut-away portion 60; 80 (Figures 7; 9) formed at the middle of the top of the holder and is connected to the infusion bag 1 at a middle portion 4'.

Figure 4a illustrates the cycle for producing a holder 7 shown in Figure 4b.

A strip 40 of paper or semi-rigid material has lateral cut-away portions 41a and 41b arranged in pairs. The surface of the strip 40 may be provided with a thin coating of easily tearable adhesive. A filament 42, comprising a lateral loop 42a at the cut-away portion 41a, a zig-zag portion 42b and a portion 42c leading to a next lateral loop 42d at the next cut-away portion 41a, is set out and is attached to the strip 40 by any known method, for example by means of the above-mentioned adhesive or by spraying with adhesive. Then, a strip 43 of paper or other suitable material is laid over the strip 40 carrying the filament 42. For this purpose, the strip 40 may be provided with a strip of adhesive at its edge portion, or the upper strip 43 can be prepared beforehand so that it has the same cut-away portions as the strip 40 and is provided with an adhesive strip. The two strips 40 and 43 are bonded together over the shaded portions 44, and finally the individual holders 7 are separated off at a point 45 at the cut-away portions 41a and 41b.

This illustration comprising the shaded portions 44 clearly shows that one end 12 of the filament 6, shown in Figure 1, is retained in the holder 7, and the second end 13 of the filament projects from this holder in the form of a loop, and in this way occupies the predetermined position for attaching to the edge 4 of the bag 1a, shown in Figures 2b and 2c, so that

no time-consuming and expensive preparations are necessary.

Figures 5a and 5b show a similar arrangement of the filament 52 between two strips 50 and 53 with loops 52a formed at the cut-away portions 51a. The shaded portion 54 in Figure 5b shows how access to the unattached portion in the interior of the holder 7 can be provided so as to take into account dimensional differences when the holders 7 are cut off from the strip.

The difference between the arrangements shown in Figures 4a and 4b on the one hand and 5a and 5b on the other resides only in the arrangement of the filaments 42 and 52, since as shown in Figures 4a and 4b, a gripping portion 46 is formed at which no filament 6 is present, and therefore no hindrance can be caused by over-vigorous handling when extracting.

Figures 6 to 9 show two modified arrangements for leading out the end 13 of the filament in the middle of the holder 7 as already shown in the Figure 3 arrangement. The two arrangements, one shown in Figures 6 and 7 and the other in Figures 8 and 9, differ only in the form of the cut-away portions 60 in Figures 6 and 7, and 80 in Figures 8 and 9. In both cases a filament 62 and 82 respectively crosses a cut-away portion 60 and 80 respectively and then continues in zig-zag form in the ungummed central portion, and before crossing the following cut-away portion 60 and 80 respectively, is connected in the edge portion 84 to the two strips, i.e. a rear strip and a front strip.

The individual holders 7, illustrated in Figures 7 and 9, show that the free end 13 of the filament 6 does not, as before, emerge laterally from the holder 7 in the form of a loop, but crosses the cut-away portion 60; 80. Thus, a connection between the filament 6 and the infusion bag 1 can be achieved at the middle of the holder 7 during production of the bag. The holder 7 can nevertheless be easily pulled out of the pocket of the tear-open bag 1.

Further configurations based on these various illustrations can be readily arrived at; for example, the filament could be arranged side by side in the form of two zig-zags of opposite sense, so as to increase the length of the filament. Suitable choice of the adhesive structure between the strips for forming the holder can provide various advantages such as the gripping portion 46 shown in Figures 4a and 4b, or some other method of leading out the filament, depending upon the requirements of the final user of the infusion bag.

CLAIMS

1. An infusion bag for an infusible substance comprising: a bag made of a liquid-penetrable material for accommodating the substance; a turned-over edge portion of the bag which closes the filling opening and which, for the purpose of forming a pocket directed away from the turned-over edge, is sealed by sealing seams at least at each side and together with the walls of the bag at the turned-over edge; a filament attached at one end in one of the sealing seams; and a holder attached to the free end of the filament, the holder having a cavity in which practically the entire length of the filament is

accommodated.

2. An infusion bag as claimed in claim 1, wherein the filament is arranged in a zig-zag manner in the holder, in which it is held without crossing over
5 itself.

3. An infusion bag as claimed in claim 1 or claim 2, wherein the holder consists of two foils which are sealed together over the entire periphery of the holder at a sealing seam, except for a zone forming a
10 free passage for the filament.

4. An infusion bag as claimed in claim 3, wherein the end of the filament that is attached in the holder is sealed into the sealing seam at the periphery of the holder.

5. An infusion bag as claimed in claim 3, wherein the walls of the holder have, at least in the zone of the free passage for the filament, an opening commensurate with the size of the filament.

6. An infusion bag as claimed in claim 4, wherein
20 the filament is arranged asymmetrically in the holder to facilitate free running of the filament when it is pulled out.

7. An infusion bag as claimed in any one of claims 1 to 6, wherein the filament is sealed in the
25 holder on to one of its walls in a readily detachable manner.

8. A method of producing the infusion bag as claimed in claim 1, wherein first the holder is produced as a strip in such manner that a filament is laid
30 in zig-zag form on a strip of connectible material and is attached thereto in a readily releasable manner, a covering strip is arranged on this first strip and is joined to the first strip laterally as well as in the form of a web extending over the strip, the web having at
35 least one area across which the filament extends in a freely movable manner, the individual holders are then separated off in the zone of the web in such a manner that the free passage for the filament is formed, a bag filled with the substance is turned
40 over at the open end and the holder with the free end of the filament is first laid in the fold at the turned-over part, and finally the turned-over part together with the walls of the bag are folded round the holder and are joined together.

9. A method as claimed in claim 8, wherein the
45 filament associated with each holder is led out of the zone of the strip in the form of a loop, and in that web is formed at this point, and the separating cut is in the zone of the loop.

10. An infusion bag substantially as hereinbefore
50 described with reference to Figures 1, 2 and either 4 or 5 or Figures 3 and either 6 and 7 or 8 and 9 of the accompanying drawings.

11. A method of producing an infusion bag substantially as hereinbefore described with reference
55 to Figures 1, 2 and either 4 or 5 or Figures 3 and either 6 and 7 or 8 and 9 of the accompanying drawings.